

IN THE CLAIMS:

22. (Previously Presented) A device for separating impurities from the lubricating oil of an internal combustion engine comprising:
a two piece housing comprising a stationary lower housing part and a removable upper screw cap,
a filter element,

said filter element being arranged in said two-piece housing that is closed during operation of the device and,

said screw cap and said filter element comprising detachable connection means which can be brought into contact and are used to transmit axial tractive forces,

said filter element being removed from said housing by means of said connection means when said screw cap is rotated in its loosening rotational direction,

said connection means being arranged to be brought into contact by rotating said screw cap in its loosening rotational direction and arranged to be disengaged by rotating said screw cap in a tightening rotational direction.

23. (Previously Presented) A device according to claim 22, wherein an angle of rotation covered by said screw cap between a disengaged position and an engaged position of said connection means ranges from approximately 15 degrees to 30 degrees.

24. (Previously Presented) A device according to claim 22, wherein said connection means on said filter element are formed by a concentric circle of snap-on hooks formed at an upper end disk of said filter element, and said connection means on said screw cap are formed by a ring with cam segments that is concentrically arranged at a bottom side of an upper part of said screw cap, wherein, in a first rotational position that can be adjusted by rotating said screw cap in its tightening rotational direction, said circle of snap-on hooks can be moved in an axial direction into said ring and out of said ring with said cam segments in relation to each other, and wherein, in a second rotational position that can be adjusted by rotating said screw cap in its loosening rotational direction, said circle of snap-on hooks that has been moved into said ring cannot be moved out of said ring with said cam segments in axial direction in relation to each other.

25. (Previously Presented) A device according to claim 24, wherein said ring with said cam segments is inserted in a recess of said screw cap as a separate component such that it can neither be rotated nor lost.

26. (Previously Presented) A device according to claim 24, wherein said screw cap including its ring with said cam segments is a single-piece injection-molded part of plastic.

27. (Previously Presented) A device according to claim 22, wherein said screw cap, said upper end disk of said filter element as well as said intermediate cap if necessary and, if need be, said ring with said cam segments are each single-piece injection-molded parts of plastic.

28. (Previously Presented) A device for separating impurities from the lubricating oil of an internal combustion engine, comprising:

a common two-piece housing that is closed during operation of the device and comprises a removable upper screw cap and a stationary lower housing part,

a filter element at a bottom of the device and, on top of said filter element, a centrifuge with a rotor drivable by means of lubricating oil flowing through it, wherein said filter element and said centrifuge are arranged, one above the other, in said two-piece housing,

a removable intermediate cap arranged in said housing between said filter element and said centrifuge,

said intermediate cap and said filter element comprising first detachable connection means which can be brought into contact and are used to transmit axial tractive forces, and wherein said centrifuge, said intermediate cap and said filter element can be removed from said housing while the latter is in its open state,

said screw cap and said intermediate cap additionally comprise second detachable connection means that can be brought into contact and are used to transmit axial tractive forces,

said second connection means arranged to be brought into contact by rotating said screw cap in its loosening rotational direction in relation to said intermediate cap and arranged to be disengaged by rotating said screw cap in its tightening rotational direction in relation to said intermediate cap, and

said connection between said first connection means being formed as a locking connection, wherein said connection means on said filter element are formed by a circle of

locking hooks with locking noses.

29. (Previously Presented) A device according to claim 28, wherein said intermediate cap has a shape of a bell and comprises at its outer perimeter axially extending fins each of which is provided with at least one broadening or aperture pointing in circumferential direction, and that said screw cap comprises at its lower edge hooks or noses that are pointing in its loosening rotational direction and can be brought into contact with said broadenings or apertures by rotating said screw cap in its loosening rotational direction in relation to said intermediate cap and can be disengaged by rotating said screw cap in its tightening rotational direction in relation to said intermediate cap.

30. (Previously Presented) A device according to claim 29, wherein said fins that comprise said broadenings or apertures are, at the same time, used as stabilization and force diverting fins for reinforcing said intermediate cap and for diverting onto said screw cap such forces that are caused by an oil pressure below said intermediate cap in said interior region of said housing.

31. (Previously Presented) A device according to claim 29, wherein said broadenings or apertures on the one hand and/or said hooks or noses on the other hand are each provided with a slope or step at their surfaces that are brought into contact, said slope or step securing the engaged position.

32. (Previously Presented) A device according to claim 28, wherein said intermediate cap has a shape of a bell and comprises, in a radially outer region of its upper side, several wings that are pointing in an axially upward direction, are spaced apart from each other in circumferential direction and are each provided with at least one broadening or aperture pointing in circumferential direction or with a depression used as connection means and recessing in a radially inward direction, and that said screw cap comprises at its lower edge hooks or noses as connection means that are pointing in said loosening rotational direction of said screw cap or in a radially inward direction, wherein said connection means can be brought into contact with said connection means of said intermediate cap by rotating said screw cap in its loosening rotational direction in relation to said intermediate cap and can be disengaged by rotating said screw cap in its tightening rotational direction in relation to said intermediate cap.

33. (Previously Presented) A device according to claim 32, wherein said second connection means are arranged and designed such that, before their thread engagement, said second connection means overlap each other in axial direction when said screw cap is placed onto said stationary housing part.

34. (Previously Presented) A device according to claim 32, wherein said wings comprise, at their radially outer end, a guide contour fitting in said interior region of said screw cap with motional play.

35. (Previously Presented) A device according to claim 32, wherein a step is provided at or next to each of said wings, said step projecting in a radially outward direction and forming the basis on which a lower edge of said screw cap is supported when said screw cap is in said tightened state.

36. (Previously Presented) A device according to claim 35, wherein a part of said steps at that end of said screw cap that is pointing in said loosening rotational direction thereof each comprises an edge projecting in upward direction.

37. (Previously Presented) A device according to claim 32, wherein said wings are connected to each other via a continuous circumferential collar or are joined to form a continuous circumferential collar.

38. (Previously Presented) A device according to claim 28, wherein said screw cap, said upper end disk of said filter element as well as said intermediate cap if necessary and, if need be, said ring with said cam segments are each single-piece injection-molded parts of plastic.

39. (Previously Presented) A device for separating impurities from the lubricating oil of an internal combustion engine, comprising:

a common two-piece housing that is closed during operation of the device and comprises a removable upper screw cap and a stationary lower housing part,

a filter element at a bottom of the device and, on top of said filter element, a centrifuge with a rotor drivable by means of lubricating oil flowing through it, wherein said filter element and said centrifuge are arranged, one above the other, in said two-piece housing,

a removable intermediate cap arranged in said housing between said filter element and said centrifuge,

said intermediate cap and said filter element comprising first detachable connection means which can be brought into contact and are used to transmit axial tractive forces, and wherein said centrifuge, said intermediate cap and said filter element can be removed from said housing while the latter is in its open state,

said screw cap and said intermediate cap additionally comprise second detachable connection means that can be brought into contact and are used to transmit axial tractive forces,

said second connection means arranged to be brought into contact by rotating said screw cap in its loosening rotational direction in relation to said intermediate cap and arranged to be disengaged by rotating said screw cap in its tightening rotational direction in relation to said intermediate cap, and

said connection between said first connection means is designed as a rotary connection, wherein said first connection means can, in relation to said filter element, be brought into contact by rotating said screw cap in its loosening rotational direction, said screw cap taking along said intermediate cap, and can, in relation to said filter element, be disengaged by rotating said intermediate cap in an opposite direction.

40. (Previously Presented) A device according to claim 39, wherein an angle of rotation covered by said screw cap between said disengaged position and said engaged position of said first and second connection means in relation to said filter element ranges approximately from approximately 45 degrees to 120 degrees.

41. (Previously Presented) A device according to claim 39, wherein said intermediate cap has a shape of a bell and comprises at its outer perimeter axially extending fins each of which is provided with at least one broadening or aperture pointing in circumferential direction, and that said screw cap comprises at its lower edge hooks or noses that are pointing in its loosening rotational direction and can be brought into contact with said broadenings or apertures by rotating said screw cap in its loosening rotational direction in relation to said intermediate cap and can be disengaged by rotating said screw cap in its tightening rotational direction in relation to said intermediate cap.

42. (Previously Presented) A device according to claim 41, wherein said fins that comprise said broadenings or apertures are, at the same time, used as stabilization and force diverting fins for reinforcing said intermediate cap and for diverting onto said screw cap such forces that are caused by an oil pressure below said intermediate cap in said interior region of said housing.

43. (Previously Presented) A device according to claim 41, wherein said broadenings or apertures on the one hand and/or said hooks or noses on the other hand are each provided with a slope or step at their surfaces that are brought into contact, said slope or step securing the engaged position.

44. (Previously Presented) A device according to claim 39, wherein said intermediate cap has a shape of a bell and comprises, in a radially outer region of its upper side, several wings that are pointing in an axially upward direction, are spaced apart from each other in circumferential direction and are each provided with at least one broadening or aperture pointing in circumferential direction or with a depression used as connection means and recessing in a radially inward direction, and that said screw cap comprises at its lower edge hooks or noses as connection means that are pointing in said loosening rotational direction of said screw cap or in a radially inward direction, wherein said connection means can be brought into contact with said connection means of said intermediate cap by rotating said screw cap in its loosening rotational direction in relation to said intermediate cap and can be disengaged by rotating said screw cap in its tightening rotational direction in relation to said intermediate cap.

45. (Previously Presented) A device according to claim 44, wherein said second connection means are arranged and designed such that, before their thread engagement, said second connection means overlap each other in axial direction when said screw cap is placed onto said stationary housing part.

46. (Previously Presented) A device according to claim 44, wherein said wings comprise, at their radially outer end, a guide contour fitting in said interior region of said screw cap with motional play.

47. (Previously Presented) A device according to claim 44, wherein a step is provided at or next to each of said wings, said step projecting in a radially outward direction and forming the basis on which a lower edge of said screw cap is supported when said screw cap is in said tightened state.

48. (Previously Presented) A device according to claim 47, wherein a part of said steps at that end of said screw cap that is pointing in said loosening rotational direction thereof each comprises an edge projecting in upward direction.

49. (Previously Presented) A device according to claim 44, wherein said wings are connected to each other via a continuous circumferential collar or are joined to form a continuous circumferential collar.

50. (Previously Presented) A device according to claim 39, wherein said filter-element-side connection means are formed by a concentric circle of snap-on hooks that is present at an upper end disk of said filter element, and that said associated connection means of said intermediate cap are formed by a ring with cam segments that is concentrically arranged at a bottom side of said upper part of said intermediate cap, wherein, in a first rotational position that can be adjusted by rotating in tightening rotational direction, said circle of snap-on hooks can be moved in axial direction into said ring and out of said ring with said cam segments in relation to each other and wherein, in a second rotational position that can be adjusted by rotating in loosening rotational direction, said circle of snap-on hooks that has been moved into said ring cannot be moved out of said ring with said cam segments in an axial direction in relation to each other.

51. (Previously Presented) A device according to claim 50, wherein said intermediate cap including its ring with said cam segments is a single-piece injection-molded part of plastic.

52. (Previously Presented) A device according to claim 39, wherein said ring with said cam segments is inserted in a recess of said intermediate cap as a separate component such that it can neither be rotated nor lost.

53. (Previously Presented) A device according to claim 39, wherein said connection means that are provided as rotary connection means are designed in the form of a bayonet lock or as a short-length thread.

54. (Previously Presented) A device according to claim 39, wherein said screw cap, said upper end disk of said filter element as well as said intermediate cap if necessary and, if need be, said ring with said cam segments are each single-piece injection-molded parts of plastic.